REMARKS

Claims 27, 28, 31, 32 and 37 were rejected under 35 U.S.C. § 102(e) as anticipated by the patent to Kinoshita, 6,330,265, and Claims 29, 30, 33-36 and 38-43 were rejected under 35 U.S.C. § 103 as being unpatentable over the patent to Kinoshita.

Applicants respectfully submit that Kinoshita does not have each and every one of the features specified in independent Claim 27 and thus cannot anticipate either that claim or any of the claims dependent thereon. In addition, the Kinoshita patent operates in an entirely different manner than applicants' invention as claimed, and the structures disclosed in the Kinoshita patent cannot be modified to obtain applicants' claimed structure.

The Office Action of November 20, 2002 identified various structures of the Kinoshita '265 patent as anticipating the structures set forth in Claim 27. The Office Action stated that the Kinoshita patent disclosed "distributed Bragg reflector gratings 20, 21A(-E) incorporated with the epitaxial structure adjacent the distributed feedback grating 10 to reflect back to the distributed feedback grating 10."

It is noted initially that the structures labeled 20 and 21A in Kinoshita are not distributed Bragg feedback gratings. Referring to the structure shown in Fig. 1 of Kinoshita, as explained in Kinoshita in Col. 6, beginning at line 66 and extending over to line 1 of Col. 7, "in the DFB laser shown here, a high-reflectivity structure 20 made up of InGaAsP layers and InP layers are made on an n-type InP substrate 12." (Emphasis added.) Further at Col. 7, lines 12-15 of Kinoshita, the structure 21 is described: "The high reflectivity structure 21, similarly to the high-reflectivity structure 20, may be made by alternately stacking InGaAsP layer and InP layers to form a multi-layered Bragg reflector." (Emphasis added.)

Thus, the structures 20 and 21A are multi-layered reflectors which serve, as illustrated in Fig. 1, to reflect light vertically either back down to or up to the distributed feedback grating, but the structures 20 and 21A are clearly not diffraction gratings. While they may be called "Bragg" reflectors because such multi-layered structures provide Bragg type reflection, such structures should not be confused with Bragg diffraction gratings which function in an entirely different manner. The multi-layer structures 20 and 21 do not meet the definition of distributed Bragg reflector gratings and therefore what is shown in Kinoshita lacks an element specified in Claim 27.

Moreover, Claim 27 specifies in subparagraph (c) that the distributed Bragg reflector gratings are "adjacent to each of the longitudinal ends of the distributed feedback grating to reflect light back longitudinally to the distributed feedback grating." As is apparent from the figures of Kinoshita, including Fig. 1, the reflectors 20 and 21A (in addition to not being distributed Bragg reflector gratings) are not positioned adjacent to each of the longitudinal ends of the distributed feedback grating to reflect light back longitudinally to the distributed feedback grating. As clearly seen in Fig. 1 and other figures of Kinoshita, the reflectors 20 and 21A are above and below the distributed feedback grating 10, not at the longitudinal ends of the grating 10 (the longitudinal ends of the grating 10 as shown in Fig. 1 are the edge faces of the laser). The reflectors 20 and 21A reflect light back vertically to the grating 10 rather than longitudinally, at a direction 90 degrees to the longitudinal direction of light reflection, as well illustrated by the vertical and longitudinal arrows shown in Fig. 1 of Kinoshita. As is apparent from reviewing the description in the Kinoshita patent (see, for example, the first paragraph of the Summary of the Invention), the purpose of the reflectors 20 and 21 provided above and below the waveguide is to reflect light back to the

waveguide with the advantage of obtaining favorable threshold characteristics even with second order gratings (see Col. 9, lines 15-25).

In contrast, in the present invention, the distributed Bragg reflector gratings are formed adjacent to the ends of the distributed feedback grating to simultaneously obtain high efficiency and a high degree of guided-field uniformity. Thus, applicants' structures have an entirely different purpose and a different objective than that set forth in Kinoshita, so that there is no suggestion in Kinoshita to modify its structures to obtain the features of either Claim 27 or the claims that are dependent thereon.

Independent Claim 27 has been amended above to clarify that there is structure blocking current flow through the distributed Bragg reflector gratings. This feature is by definition a feature of a distributed Bragg reflector, and is included in Claim 27 for clarification only. Support for this amendment is found at various places in the application, e.g., at page 14, lines 17-24 and page 17, lines 7-15. In contrast, the multi-layer reflectors of Kinoshita have current flow through them.

For the foregoing reasons, it is submitted that all of the claims remaining in the application should be in condition for allowance.

Respectfully Submitted,

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